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ABSTRACT

This study consisted of two sections of Finite Mathematics at Alvin Community College, one with 26 students and another with 21 students. The teaching strategy for both sections was basically the same with a variety of teaching aids being used in both. The comparison group was evaluated by the traditional written examination, weekly homework assignments, and some chalkboard work once a week. The experimental group was evaluated subjectively from each performance at the chalkboard and from exercises turned in at the conclusion of each class, as well as from weekly homework assignments. No significant difference in attitude towards mathematics or achievement in mathematics was found between the two groups. However, mean scores on both the Aiken-Dreger Mathematics Attitude Test (revised) and the Alvin Community College Mathematics Placement Test were higher for the experimental group. (MN)

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THE EFFECT OF WRITTEN EXAMINATIONS ON ATTITUDE AND ACHIEVEMENT IN COLLEGE FRESHMAN MATHEMATICS AT ALVIN COMMUNITY COLLEGE

by Dr. Cameron B. Douthitt

INTRODUCTION

It has been observed by mathematics instructors that written examinations increase the anxiety level in students, and as a consequence many students are not able to perform at a level which will yield an accurate evaluation by the instructor. The present study was an attempt to determine the effect of written exams on Alvin Community College freshmen who were taking Finite Mathematics.

Objectives: The objectives of the study were:

(1) To determine if written examinations affect achievement in college freshman mathematics and

(2) To determine if written examinations affect attitude towards mathematics in college freshmen.

Hypotheses: The following hypotheses were tested using a t-test:

(1) There is no significant difference in attitude towards mathematics between the experimental and comparison groups.

(2) There is no significant difference in achievement in mathematics between the experimental and comparison groups as measured by the Alvin Community College Mathematics Placement Test for Freshman Mathematics.

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DESIGN AND PROCEDURES

The study consisted of two sections of Finite Mathematics at Alvin Community College, one with 26 students and another with 21 students. No special selection procedures were used. Students registered for the sections through the usual registration procedure and no indication was given to them about the study until their attendance on the first class day. The course content closely paralleled the Committee on Undergraduate Programs in Mathematics recommendations and both sections attended class for three hours per week. One section, the comparison group, met for one hour on Mondays, Wednesdays, and Fridays, while the other section, the experimental group, met for 1 1/2 hours on Tuesdays and Thursdays.

The teaching strategy for both sections was basically the same with a variety of teaching aids being used in both. At the beginning of each class period approximately 20 minutes were devoted to the answering of students' questions and the working of some homework problems on the chalkboard by both the instructor and students. The remaining time in the comparison group was devoted to lectures on new material on Mondays and Fridays, and on Wednesdays the full class time was allotted for problem solving at the chalkboard by the students. The experimental group met for 1 1/2 hours each day with approximately 25 minutes during each class session being given to the students to work problems at the chalkboard. These problems were chosen by the instructor and given orally, thus allowing the instructor to help those students who needed assistance. During the last 10 minutes the students worked on a problem to be submitted to the instructor. The class time schedule for both groups is illustrated by Tables 1 and 2.

TABLE I

COMPARISON GROUP CLASSTIME

	First 20 Minutes	Last 30 Minutes
Mondays	Instructor answers questions; solves some homework problems	Lecturing and discussion of new topics
Wednesdays	Students work at board	Students work at board
Fridays	Instructor answers questions; solves some homework problems	Lecturing and discussion of new topics

TABLE 2

EXPERIMENTAL GROUP CLASSTIME

	First 20 Minutes	Next 20 Minutes	Next 25 Minutes	Last 10 Minutes
Tuesdays & Thursdays	Instructor answers questions; solves some homework problems	Lecturing and discussion of new topics	Students work problems at board	Students work problem to be turned in

The comparison group was evaluated by the traditional written examination method. Three one-hour, teacher-made tests were administered during the semester in addition to a two-hour comprehensive final examination. These examinations were scored by the instructor and a weekly homework assignment was scored by a student grader employed by the Mathematics Department. Some subjective evaluation was made of each student's work at the chalkboard on Wednesdays.

The experimental group was evaluated subjectively from each performance at the chalkboard. The instructor scored exercises turned in at the conclusion of each class as well as the weekly homework assignments. No major written examinations were given to the experimental group.

Grades in the course were issued on the basis of the preceding information. Table 3 gives the range of grades according to the following scale at Alvin Community College.

A	-	excellent	W	-	withdrawn
B	-	good	WP	-	withdrawn passing
C	-	fair	WF	-	withdrawn failing
D	-	passing	I	-	incomplete
F	-	failing			

TABLE 3

DISTRIBUTION OF COURSE GRADES

GRADE	A	B	C	D	F	W	WP	WF	I
COMPARISON	4	7	6	0	2	1	5	0	1
EXPERIMENTAL	3	6	6	1	0	2	1	0	0

RESULTS

Although neither of the hypotheses was rejected at the .05 level, some interesting observations and results were noted. Mean scores on both the Aiken-Dreger Mathematics Attitude Test (Revised) and the Alvin Community College Mathematics Placement Test were higher for the experimental group. Students in the experimental group were observed by the instructor to be more relaxed and appeared to enjoy the course much more than those students in the comparison group.

CONCLUSIONS AND SUGGESTIONS

From the study it appears that instructors should give more attention to other less anxiety producing methods of evaluation than major written examinations. Perhaps methods of evaluation requiring more frequent evaluation and active student involvement in demonstrating their knowledge in mathematics should be investigated. For future studies it is suggested that larger class sizes be used. Also more than one instructor should be involved with both experimental and comparison groups.